SURVEY FUTURES

SURVEY DATA COLLECTION METHODS COLLABORATION

Survey Practice Guide 7: Targeted survey designs for self-completion surveys

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Survey Futures is an Economic and Social Research Council (ESRC)-funded initiative (grant ES/X014150/1) aimed at bringing about a step change in survey research to ensure that high quality social survey research can continue in the UK. The initiative brings together social survey researchers, methodologists, commissioners and other stakeholders from across academia, government, private and not-for-profit sectors. Activities include an extensive programme of research, a training and capacity-building (TCB) stream, and dissemination and promotion of good practice. The research programme aims to assess the quality implications of the most important design choices relevant to future UK surveys, with a focus on inclusivity and representativeness, while the TCB stream aims to provide understanding of capacity and skills needs in the survey sector (both interviewers and research professionals), to identify promising ways to improve both, and to take steps towards making those improvements. Survey Futures is directed by Professor Peter Lynn, University of Essex, and is a collaboration of twelve organisations, benefiting from additional support from the Office for National Statistics and the ESRC National Centre for Research Methods. Further information can be found at www.surveyfutures.net

Research Strand 4 of Survey Futures ("Methods for surveys without field interviewers"), led by Professor Olga Maslovskaya (University of Southampton), focuses on the challenges associated with self-completion general population surveys in both cross-sectional and longitudinal contexts. The strand explores ways to optimise design characteristics, with the aim of achieving more representative samples of the general population. The main challenges associated with self-completion general population surveys are associated with the absence of field interviewers to facilitate recruitment and retention of participants and, additionally in a UK context, the absence of a sampling frame of named individuals. Research Strand 4 has five sub-projects:

(1) Recruitment methods.
(2) Targeted survey procedures.
(3) Population subgroups.
(4) Knock-to-nudge
(5) Within-household selection methods.

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Contents

Executive summary

- This practice guide offers an overview of targeted survey designs and provides survey practitioners with step-by-step guidance on developing targeted designs for their self-completion surveys.

- Targeted survey designs offer an alternative to standardised survey designs, by treating subgroups of sample members differently in order to improve the relationship between survey costs and non-response errors.

- Targeted procedures can be implemented on any survey but are more likely to be effective in situations where relevant information is known about sample members prior to fieldwork. This includes when an informative sampling frame, such as administrative records or population register, is used, in follow-up surveys and longitudinal surveys. Address-based samples often rely on external data linkage to gain relevant information.

- Targeted design features that have been found to be effective include invitation letters, between wave mailings, knock-to-nudge visits, mode assignment, differential incentive value, extra incentives and incentive timing.

- Finally, this guide also includes three examples of how targeted designs can be tested and implemented on surveys.

Glossary

Address-based sampling frame: A sampling frame that lists residential addresses (e.g. the PAF in the UK).

Agent of change: The person a targeted feature is aimed at (e.g. the respondent or the interviewer).

Design feature: A specific aspect of a survey design.

Interviewer-administered surveys: Surveys where interviewers are employed to ask the questions and conduct data entry.

Longitudinal surveys: Surveys that repeatedly collect data from the same group of respondents over an extended period of time.

Named person sampling frame: A sampling frame where individuals are explicitly identified (e.g. a population register or administrative records).

PAF: The postcode address file, the address list commonly used for social survey sampling in the UK.

Sample subgroup: A subset of sample members defined by specific characteristics.

Sampling frame: A list of all units (e.g. individuals or addresses) in the population of interest that the sample is drawn from.

Self-completion surveys: Surveys where respondents read the questions and enter responses themselves.

Standardisation: An approach where all sample members are subject to the same set of procedures at all stages of the survey process.

Survey error: The deviation of survey estimates from the true population value. We recognise multiple types of errors based on where in the survey process they occur (e.g. sampling error, coverage error, measurement error, non-response error).

Targeted design: An alternative to standardised survey designs, in which subgroups of sample members are treated differently in order to improve the relationship between survey costs and errors.

1. Introduction

1.1 What are targeted designs?

Survey research commonly relies on standardisation (Lynn, 2017), where all sample members are subject to the same set of procedures. While standardising data collection processes is arguably the best way to ensure equivalence of measurement, response inducement strategies can benefit from a different approach. In recent years, targeted designs have gained popularity as an alternative to standardised approaches.

A targeted survey design is characterized by the variation of one or more design features between subgroups of sample members aimed at improving the balance between survey costs and errors, where the variation(s) are identified and planned prior to the start of data collection (Lynn, 2017). Targeted designs are a particular type of adaptive designs. Adaptive designs also include both responsive designs and tailored designs. Responsive designs involve monitoring indicators throughout the fieldwork period and making adaptations after data collection has already begun in response to preliminary outcomes (Groves & Heeringa, 2006), whereas targeted designs involve pre-planned interventions, which do not necessitate making any changes during the course of fieldwork. Tailored designs treat individual sample members differently based on their behaviour and characteristics (Couper & Wagner, 2011), whereas targeted designs apply interventions to broad subgroups.

The growing body of published literature supports the effectiveness of targeted response inducement strategies, with a number of surveys now incorporating targeted features into their designs (Sladka & Lynn, 2025).

1.2 When should I use a targeted design?

Targeted survey designs are used to improve the balance between survey costs and errors; however, not all sources of error can be addressed using a targeted design. Due to the fact that targeting is only applied once the sample has been drawn, it cannot be used to tackle sampling or coverage error. Non-response error is typically the focus of

targeted interventions, though it is often through another stated aim such as improving sample balance or reducing noncontact or refusal rates (Lynn, 2017). Although measurement error can also be addressed by targeting, the focus of this practice guide is solely on targeting as a response inducement strategy.

To implement a targeted design, information about sample members must be available in advance, as it is crucial for identifying which subgroups would benefit from being targeted and determining the appropriate variation(s) in treatment. Practitioners should keep this in mind when deciding whether to adopt a targeted design and ensure they have access to useful information. In some cases, this information may be obtained from the sampling frame, however, the commonly used address-based sampling frames are typically not very informative. This makes the use of targeting on address-based samples more challenging, though there are solutions such as external data linkage (see chapter 2.2 for more detail). Longitudinal studies, on the other hand, are particularly well suited for targeted designs, as data from past waves can be used to inform targeting.

Practitioners should also have a clear idea of their goals when adopting a targeted design, as there are many ways targeting can be utilised to improve the balance between survey costs and errors. It is not necessary for both costs and errors to be directly affected by the design - the relationship can change even if only one of the two is affected. A design which restricts costly interventions to the lowest response-propensity group, rather than applying them to the whole sample, can help to save costs without affecting error, whereas a design that redistributes resources between subgroups can reduce error without affecting costs. Designs that introduce low-cost interventions may bring a modest improvement in response, while costly designs have the potential to substantially reduce errors.

Finally, it should be noted that the adoption of targeting does not have to involve introducing any new features - features already in use can be modified to be used in a targeted way, which is less costly and time consuming.

1.3 What kinds of targeted designs are possible?

A wide variety of possibilities for targeting can be considered. Targeted designs vary, depending on **who** the targeted feature is aimed at (the agent of change), **how** the feature effects change (the mechanism) and **which outcome** is affected (Figure 1). In the case of self-completion surveys, the agent of change is always the respondent. The mechanism by which change is achieved can be either reduced burden of participation or increased motivation to participate. The outcomes that can be affected by targeted features are location propensity, contact propensity, and cooperation propensity (Lynn, 2017). For self-completion surveys, location propensity can be interpreted as the likelihood of survey communications reaching a sample member, and contact propensity is the likelihood of a sample member giving attention to survey communications once they have been received. Cooperation propensity is the likelihood that the sample member will complete the questionnaire.

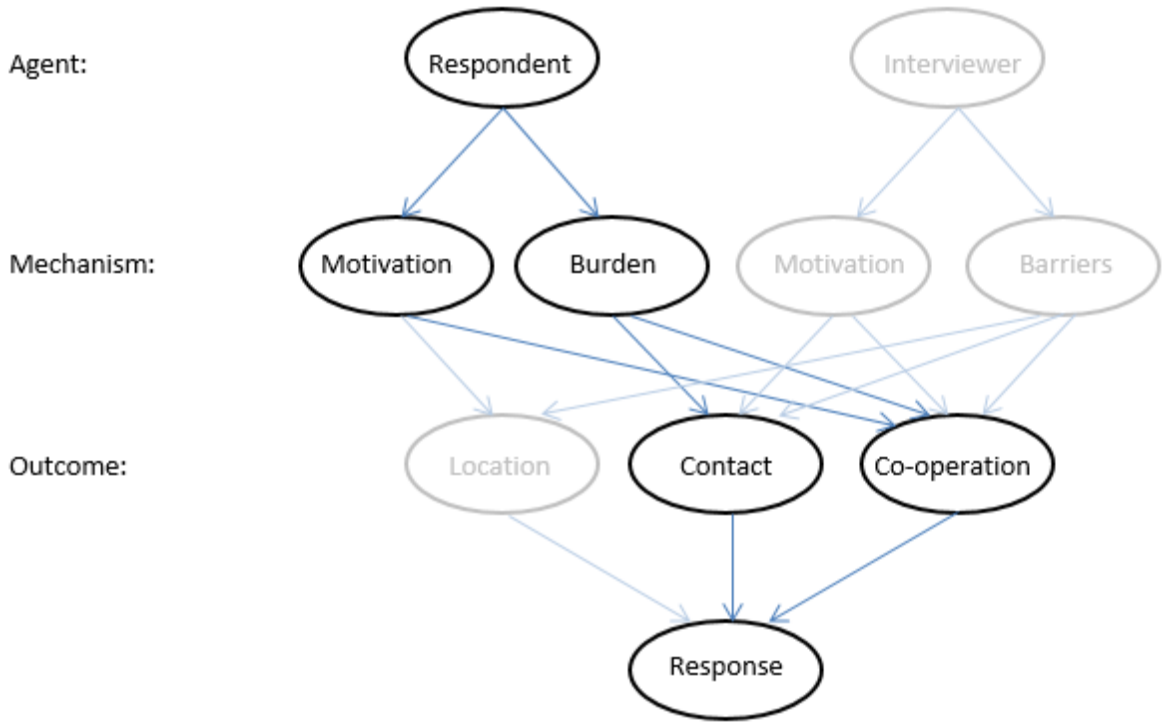

Figure 1: Dimensions of Targeted Design Features for Self-Completion Surveys. Adapted from Lynn (2017).

1.4 Which features can be used in a targeted way

There are many design features that can be used in a targeted way. These include a range of features that can be incorporated into mailings and communications with sample members, as well as features that involve field workers in some way (delivering or collecting questionnaires or encouraging sample members to participate, as in the knock-to-nudge approach, where respondents receive an in person visit in order to nudge them to complete the survey (Domarchi, Maslovskaya and Smith, 2025)). As the use of field workers is a relatively expensive addition to an otherwise self-completion survey, knock-to-nudge visits are typically targeted to relatively small but important subgroups.

Features that do not require the use of field workers include:

- The content or design of respondent communications such as invitation letters, reminders, between-wave mailings or landing pages of web surveys, as well as the design or length of the questionnaire itself;
- The mode, number and timing of respondent communications such as reminders;
- The use, nature or value of respondent incentives;
- The offer of an alternative data collection mode, such as a paper questionnaire.

Table 1 presents an overview of design features suitable for targeting on self-completion surveys and the ways in which effects might operate.

Of the features listed here, the following have all been shown to be effective by at least one experimental study: **targeted invitation letters** (Lynn, 2016; Einarsson et al., 2024; Zhang et al., 2024), **between wave mailings** (Fumagalli et al., 2013; Cleary & Balmer, 2015), **knock-to-nudge visits** (Fraser, 2024; Maslovskaya et al, 2025), **mode assignment** (Luiten & Schouten, 2013), **differential incentive value** (Jackson et al., 2020; Beste et al., 2023), **extra incentives** (Zukerberg et al., 2007; Atchison, 2025) and **incentive timing** (McGonagle et al., 2023)

Table 1: Targeted features for self-completion

Design feature	Mechanism & outcome	Intervention
Communication content/design	Should motivate the sample member to take part in the survey	Invitation letter
		Reminder letter
	Should motivate sample members to begin the questionnaire	Landing page
		Questionnaire design
	Should motivate the sample member to take part in the next wave of a longitudinal survey	Between wave mailings
	Should motivate the respondent to complete the questionnaire	Questionnaire design and length
Communication protocol	Should improve chances that sample members are located at next wave of a longitudinal survey	Contact information request
	Should improve the chances that sample members are contacted	Timing/number of reminders
		Use of registered/special mail
		Knock-to-nudge visit
		Contact mode
		Reminder mode
Data collection mode	Should make accessing the questionnaire easier for the sample member	Mode assignment
		Provision of alternative mode
Incentives	Should motivate the sample member to take part in the survey	Incentive value
		Extra incentive
		Incentive timing and/or conditionality

Furthermore, some other targeted interventions have been used or are currently being used on surveys in the UK and are believed to be effective, such as **contact information request** (Lynn, 2012), **varying number of reminders** (DCMS, 2022; DCMS, 2023; HMRC, 2023; Kantar Public, 2023), and **provision of alternative mode** (DESNZ, 2023; DCMS, 2022; DCMS, 2023; HMRC, 2023; Kantar Public, 2023). For more detailed review of evidence and current practice see Sladka & Lynn (2025).

The remaining interventions listed are ones that – to our knowledge – have neither been tested nor used but have potential to be applied in a targeted way.

2. Developing a targeted design

Some human resources are required to develop a targeted design, requiring both analysis skills and research knowledge. This should be planned for. The main steps in the development of an effective targeted design are summarised in Figure 2 and elaborated upon in the following sub-sections.

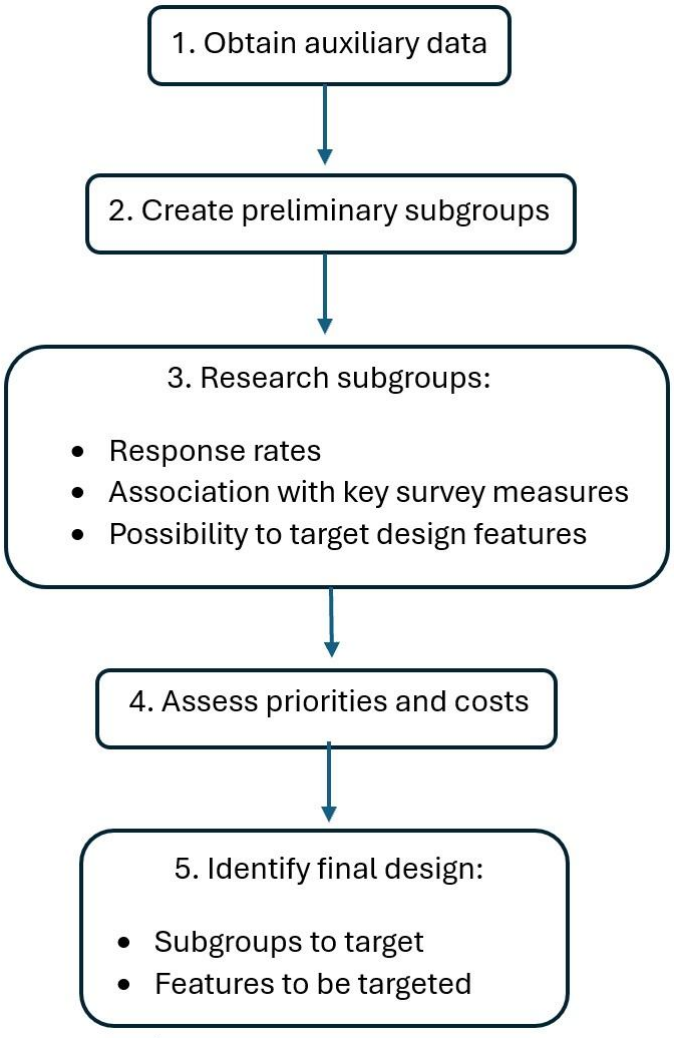

Figure 2: The process of developing a targeted design

Step 1: Obtain auxiliary data

The first step is to obtain auxiliary data that will be used to define the design.

- **Longitudinal surveys:** this will consist of survey data, and possibly also paradata, from previous waves for the set of cases that will be issued to field for the next wave.
- Cross-sectional surveys using a **named person sampling frame** (such as administrative databases of benefit recipients or registered students: all variables that may be useful for targeting should be captured at the time the sample is selected.
- Cross-sectional surveys using the **Postcode Address File** (PAF)[1]: a suitable set of variables should be linked to sample addresses from external sources - an approach already utilised by several UK surveys (DESNZ, 2023; DCMS, 2023; DCMS, 2022; Fraser, 2024; HMRC, 2023; Kantar Public, 2023). Linkage of such variables to the PAF may in any case be desirable in order to stratify the sample, so linkage of additional variables for targeting purposes can be done at the same time rather than necessitating an additional process.

  There are many geographically-referenced datasets available for linkage to the PAF. Linkage can be done via unit either postcodes or grid co-ordinates, to any other data sources that contain the same geographical identifiers, or via standardised areal units that can be delineated in terms of those identifiers, such as output areas, lower layer super output areas (LSOAs) or electoral wards (O'Toole et al, 2025). Many small area statistics that are available for some of those standardised areal units come from official sources such as government departments or the Office for National Statistics – including data from the Census of Population[2], Index of Multiple Deprivation[3], Labour Market Statistics[4], Crime statistics or Urban/Rural classification. While some of these are public access data, others require a special license or other form of access agreement. Geodemographic data can also be obtained from commercial sources.

[1] The most commonly-used sampling frame in the UK for general population surveys: https://www.poweredbypaf.com/postcode-address-file/
[2] https://www.ons.gov.uk/census
[3] https://data.geods.ac.uk/dataset/index-of-multiple-deprivation-imd
[4] https://www.nomisweb.co.uk/home/profiles.asp
[5] https://www.caci.co.uk/

While accuracy is always a concern when it comes to data, it should not be the key consideration (?) for evaluating the usefulness of external data sources. Data that lends itself to creating useful groups that discriminate in terms of response propensity can still be beneficial to the design even if its accuracy is not perfect.

> 🔍**Example 1**
>
> Longitudinal studies such as BHLS and UKHLS can draw on data collected in previous waves to gain information about respondents. This information can include demographics, family or employment status, as well as response behaviour.

> 🔍 **Example 2**
>
> To gain more information about the sample, the Community Life Survey uses external data from the 2011 UK Census, the Index of Multiple Deprivation and household structure data from CACI Ltd[5].

Step 2: Create preliminary subgroups

The auxiliary data should be used to create a variety of alternative subgroupings that could potentially be used for targeting. These can be based on categories of available auxiliary variables, or cross-classifications of more than one variable. Bear in mind that subgroups should vary either in their likely response rate or in cost of data collection (or both).

Step 3: Research subgroups

The purpose of this step is to identify subgroups that show the greatest promise for targeting. For this, a subgroup should have a lower-than average participation propensity and should also be distinctive in terms of key survey variables. In other words, the quest is to find subgroups whose under-representation is likely to distort survey estimates. The more extreme the likely response rate and the greater the likely influence on survey estimates, the stronger the case is for using targeted procedures.

For repeated surveys and longitudinal surveys, an assessment of the likely response rate or the relative difficulty of obtaining response can often be performed by re-analysing outcome data from previous rounds or waves of the surveys. This may require an additional data linkage exercise if the auxiliary data being considered for the prospective survey is not already linked to previous rounds of the survey. For new surveys, evidence from other surveys about the relative representation of different subgroups and relative response rates can be informative.

Assessing likely impact on key survey measures is more challenging. For a new survey on an unresearched topic, there may be little to draw upon other than expert expectations. But for repeated surveys and longitudinal surveys, existing survey data can be analysed to assess the association between potential targeting variables (subgroups) and outcome variables.

In cases where reanalysis of survey data is possible - both for response rate assessment and for assessment of likely impact on survey measures - simple measures of association can be used. But if there are more than a small number of potential subgroupings, it may be more efficient to use regression-based modelling methods to help to identify the variables with the strongest influence.

Any subgroup can be targeted with generic procedures that are likely to be effective wherever applied, such as (higher) incentives, extra mailings and personal contact efforts. However, it is worthwhile also to consider at this stage the potential of subgroups for the application of subgroup-specific procedures (such as targeted wording of invitation or reminder letters or specific branding or gifts). A group that could be targeted with a low-cost procedure such as specific wording of communications is worthy of consideration even if it is likely to have only moderate influence on survey estimates.

Step 4: Assess priorities and costs

The knowledge obtained at step 3 should be reviewed holistically in order to form conclusions about the likely most desirable interventions. In some cases this will involve making choices between alternative subgroupings, though sometimes multiple subgroupings can be combined, depending on the nature of the targeted feature(s).

Some potential targeted features are more expensive than others to implement, so this step is also likely to involve consideration of the expected value of the likely improvements to sample composition and therefore to survey estimates.

Step 5: Final design

The final step is to choose a design, based on the assessment made at step 4. The design could potentially involve more than one targeted feature. For example, a paper version of the questionnaire could be included in the first mailing for a subgroup identified as being more likely to complete a paper questionnaire than an online one, while a paragraph of the invitation letter could emphasise different reasons for taking part for different demographic subgroups. Thus, if there are three such demographic groups there will be six different survey protocols in total, defined by the combination of three different wordings and whether or not a paper questionnaire is included initially.

When selecting sample subgroups for each targeted feature, there are three criteria to keep in mind (Lynn, 2014):

1. There should be a manageable number of groups (this number depends on the treatment variations to be used).

2. Each group should have defining characteristics that lend themselves to targeted treatment.

3. The groups must vary in terms of the cost of the treatment variation and/or in terms of their contribution to survey error.

Meeting the first two criteria ensures that a targeted design can be implemented, while meeting the third is required for the design to be able to affect the relationship between costs and errors.

Perhaps the biggest challenge in choosing a design is to assess the likely value of any improvement in survey outcomes in order to determine whether any costs involved are justified. This will inevitably involve heuristic judgment as the full range of uses of the survey data, decisions based on the survey findings, and the marginal cost of a decision being based on less accurate data, cannot be known in advance. We suggest that

measures designed to minimise the risk of non-response bias can be viewed as akin to an insurance policy: they may often be unnecessary (no data-based decisions would have been different in the absence of the measures) but from time to time the consequences of not having implemented the measures could be severe.

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Appendix: Examples

A.1 Longitudinal Survey: BHPS Between wave mailings

The British Household Panel Survey was a longitudinal survey of British households carried out by the Institute for Social and Economic Research (ISER). It ran from 1991 until 2009 when it was replaced and most of its sample absorbed by Understanding Society (UKHLS). It was carried out annually by means of face-to-face interviews and respondents would receive a report of findings in between waves (Fumagalli et al., 2013).

Between waves 17 and 18, an experiment was carried out to test the effects of sending out targeted reports designed to be relevant to subgroups of interest. Data collected at wave 17 was used to identify two groups with lower response rates, namely young people (aged 16-24) and busy people (who work long hours or have long commutes). Two versions of targeted reports were made, focused on findings and topics relevant to each of the subgroups, with design choices (i.e. layout, images or colours) also being adjusted to appeal to the respective subgroups (Fumagalli et al., 2013).

The sample was randomly allocated into two equally sized groups, one of which received the targeted treatment, while the other did not, acting as the control group. Households in the treatment group received the young person report if a young person lived there, the busy person report if a busy person lived there, or the standard report if the household did not contain any members of either subgroup. All households in the control group received the standard report (Fumagalli et al., 2013).

Looking at data from the subsequent wave, targeted between wave mailings increased the share of full interviews among the treated young respondents as well as the overall response rate among the treated busy respondents. On top of that, the per-unit cost for the targeted reports was marginally lower than for the standard report (Fumagalli et al., 2013).

Standard report

Young person report Busy person report

Fumagalli L, Laurie H, Lynn P (2012) Experiments with methods to reduce attrition in longitudinal surveys, *Journal of the Royal Statistical Society A*, 176(2): 499-519

A.2 Longitudinal Survey: UKHLS-IP Targeted mailings

The Understanding Society Innovation Panel (UKHLS-IP) is a longitudinal survey of British households carried out by the Institute for Social and Economic Research (ISER). It started in 2008 and its design and content are largely similar to the main Understanding Society survey, with additional experiments and methodological tests.

At wave 6, an experiment was carried out to test the effectiveness of using targeted initial letters. Data collected in prior waves was used to identify five target groups based on respondent characteristics: young respondents (aged 16-29), pensionable respondents (aged 60+ for female and 65+ for male), respondents with children below 16, London-dwellers and those labelled as 'employment busy' (working long hours or have long commutes). Groups were assigned in priority order, meaning each respondent was allocated to exactly one group even if they belonged to several (Lynn, 2016).

Six versions of the initial letter were made. One standard version with a broad appeal and five targeted versions where the wording of the first paragraph was adjusted to mention policy areas relevant to the respective groups. All sample members were randomly allocated to either the treatment or the control group, with everyone in the control groups receiving the standard letter. Those in the treatment group were sent one of the five targeted versions of the letter based on their group allocation, or a standard letter if they did not belong to any of the groups (Lynn, 2016).

Looking at the results, targeted letters improved response rates for low propensity groups among the treated respondents, namely recent panel entrants in CAPI mode and previous wave non-respondents in mixed mode (Lynn, 2016).

A.3 Cross-Sectional Survey: Community Life Survey

The Community Life Survey is a cross-sectional of the 16+ general population in England, collected annually by Verian (formerly Kantar Public) on behalf of the Department for Digital, Culture, Media and Sport. It is a push-to-web survey with an address-based sampling frame, namely the Postcode Address File. It follows a stratified random sampling approach, with the primary strata being defined by the ethnic mix, and the secondary strata defined by the expected (online) response rate. The survey makes use of external data that can be linked to the sampling frame to gain more information about the sample – these include data from the 2011 UK census, the Index of Multiple Deprivation and household structure data from CACI Ltd, namely the predicted number of residents by age group (Kantar Public, 2021).

In the 2020/21 survey a randomised controlled trial was conducted to assess the impact of proactively including two paper questionnaires with the second reminder on response probability (Kantar Public, 2021). Although paper questionnaires had been used on the CLS in a quasi-targeted way for many years, the experiment itself was not designed to test the efficiency of *targeted provision* of paper questionnaires, but rather to test how the *provision of paper questionnaires in itself* affected response.

Addresses within each of the 5 response group strata (labelled 1-5, where 1 has the lowest predicted response rate and 5 the highest) were randomly allocated to either receive the paper questionnaires or not. The allocation probability for the treatment group varied between the strata (80% for strata 1 & 2, 57% for stratum 3, and 20% for strata 4 & 5) in order to partially preserve the targeted provision of paper questionnaires present in the previous CLS (Kantar Public, 2021).

Adjusting for unequal sampling and experiment allocation probabilities, the inclusion of paper questionnaires with the second reminder was found to increase overall response rate while also decreasing the web response rate (Kantar Public, 2021). This means that some web responses were displaced by paper responses, which suggests that some respondents who would have otherwise responded by web at a later stage chose to respond by paper instead after receiving the paper questionnaire.

The results were further analysed by subgroup, with no clear pattern being observed when analysing the results by response group strata.

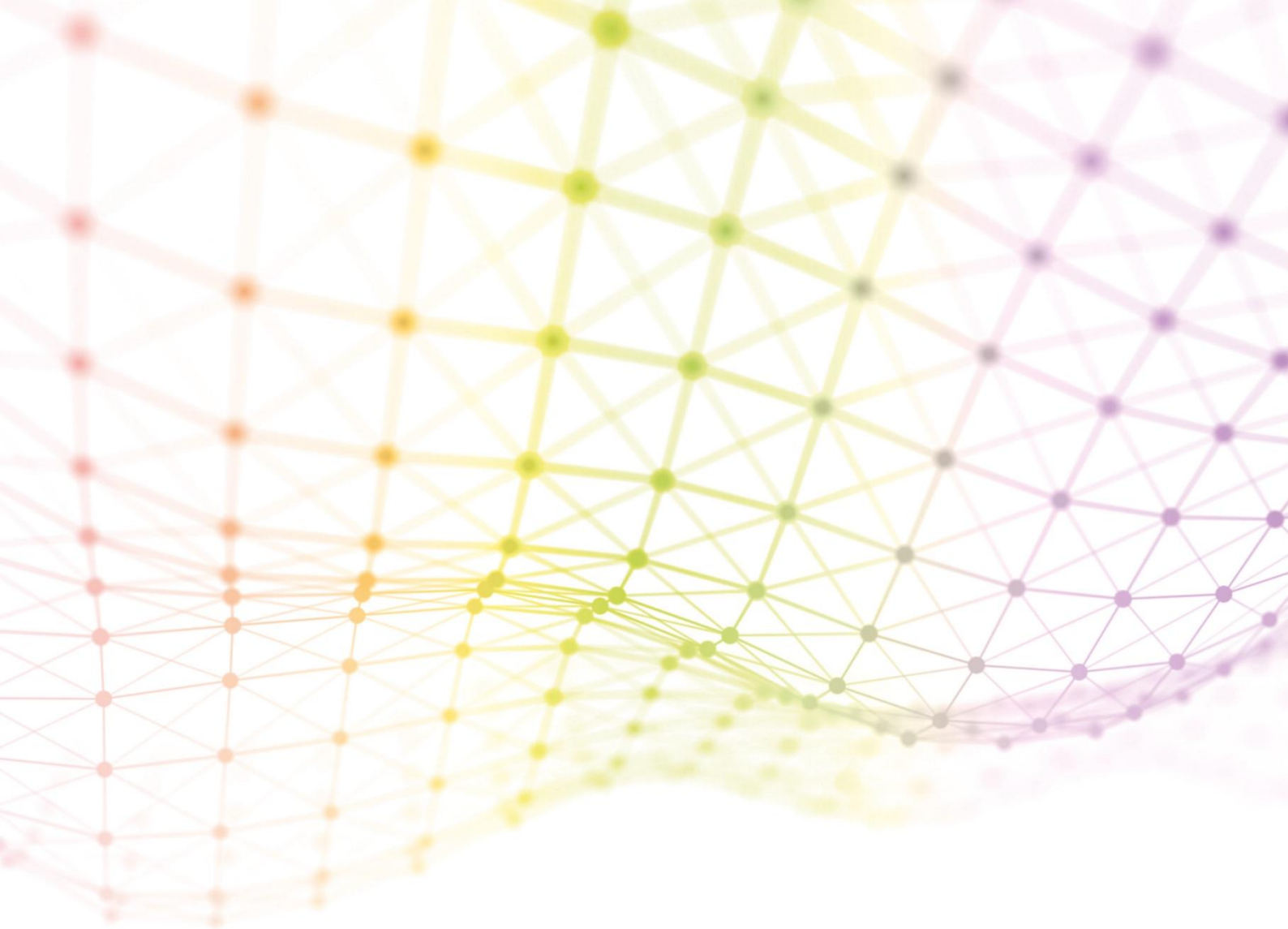
Using the predicted household age structure data from CACI, Verian constructed three quasi-strata labelled 'Young' (<35), 'Old' (65+), 'Mixed' (all other addresses) (Kantar Public, 2021). These were chosen for the subgroup analysis because the primary aim of providing paper questionnaires is to reach people who are offline or otherwise unable to complete the survey online. This group tends to be older than the population average so it could be expected that the provision of paper questionnaires will have a stronger impact in the 'Old' stratum. The data confirms this assumption, showing a greater increase in response for the 'Old' stratum than the other two (Kantar Public, 2021).

It was also examined how area deprivation affects the impact of providing a paper questionnaire, as it can also be correlated with the online status of respondents. Data from the Index of Multiple Deprivation was used to define five equal-sized groups (labelled 1-5, where 1 is the most deprived and 5 the least). A crosstabulation of area deprivation with age shows that the provision of paper questionnaires has a weaker effect in less deprived areas (IMD groups 3-5), especially for young and mixed aged addresses (Kantar Public, 2021).

Finally, the self-reported offline/online status of those who responded by paper shows that the majority of them chose to respond using the provided paper questionnaire despite having online access. This effect was especially strong for young and mixed age addresses in less deprived areas (Kantar Public, 2021).

Overall, the authors conclude that although the provision of paper questionnaires with the second reminder can be beneficial, for some strata this benefit is outweighed by the drawbacks – namely the loss of better-quality web data from respondents who could have completed the survey online (Kantar Public, 2021). As a result, they suggest that future designs should restrict proactive paper questionnaire provision only to addresses in more deprived areas and classified as 'Old'.

The subsequent iterations of the Community Life Survey (as well as other surveys carried out by the same agency) followed this recommendation by adopting a targeted design where a paper questionnaire was proactively sent with one of the reminders to the most deprived addresses and those where it was expected residents would be aged 65+ (DCMS, 2023).



University of Essex

University of Southampton

UKRI Economic and Social Research Council

NCRM National Centre for Research Methods

Office for National Statistics

UCL

Warwick The University of Warwick

Manchester 1824 The University of Manchester

City University of London Est 1894

National Centre for Social Research

LSE The London School of Economics and Political Science

Ulster University

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